

**IN THE CLAIMS:**

Please amend claims 1-2, 4-15 and 18-20 as follows.

Please cancel claims 3, 16-17, 21-41 without prejudice or disclaimer.

Please add new claims 42-65.

1. (Currently Amended) A method ~~for protecting packets to be sent from a first network node to a second network node~~, comprising ~~the steps of~~:

generating validity information for a packet, wherein the validity information comprises all necessary information required ~~for performing~~ to perform a validity check of the packet, ~~the validity information comprising algorithm information to be used to perform the validity check of the packet;~~

generating a ~~packet header for the packet~~, comprising the validity information; and sending the packet including the header from a first network node to a second network node.

2. (Currently Amended) The method according to claim 1, wherein the ~~step of generating of~~ the validity information comprises generating security information indicating security services applied to the packet.

3. (Cancelled)

4. (Currently Amended) The method according to claim 3, wherein the ~~step of~~ generating of the algorithm information comprises generating the algorithm information which indicates an algorithm to be used ~~for performing~~ to perform the validity check of the packet.

5. (Currently Amended) The method according to claim 3, wherein ~~the step of~~ generating of the algorithm information comprises generating the algorithm information which comprises values to initialize an algorithm to be used ~~for performing~~ to perform the validity check of the packet.

6. (Currently Amended) The method according to claim 1, wherein the ~~step of~~ generating of the validity information comprises generating public key information of a sending node.

7. (Currently Amended) The method according to claim 6, wherein the ~~step of~~ generating of the public key information comprises generating reference information related to how a public key can be obtained.

8. (Currently Amended) The method according to claim 7, wherein the ~~step of~~ generating of the reference information comprises generating an identity of an entity from which the public key can be obtained.

9. (Currently Amended) The method according to claim 7, wherein the ~~step of~~ generating of the reference information comprises generating a public key identifier for the public key.

10. (Currently Amended) The method according to claim 6, wherein the ~~step of~~ generating of the public key information comprises generating the public key.

11. (Currently Amended) The method according to claim 6, wherein the ~~step of~~ generating of the public key information comprises generating public key verification information indicating information in order to verify that the public key actually belongs to the sending node.

12. (Currently Amended) The method according to claim 1, wherein the ~~step of~~ generating of the validity information comprises generating an information item—~~for preventing to prevent~~ replay attacks.

13. (Currently Amended) The method according to claim 12, wherein the ~~step of~~ generating of the information item comprises including in the information item an indication of a procedure to be used for anti replay attacks.

14. (Currently Amended) The method according to claim 12, wherein the ~~step of~~ generating of the information item comprises including in the information item a time stamp.

15. (Currently Amended) The method according to claim 6, further comprising ~~the step of~~.

signing the packet using a private key corresponding to ~~the Public Key~~ a public key indicated by the validity information in the packet header in a sending network node.

16-17. (Cancelled)

18. (Currently Amended) ~~A network node for sending packets to a receiving network node~~An apparatus, comprising:

First validity information generating means for generating validity information for a packet;

Second packet header generating means for generating a header for the packet, comprising the validity information; and

sending means for sending the packet including the header to a receiving network node,

wherein the validity information comprises all necessary information required for performing a validity check of the packet, and the validity information comprises algorithm information to be used to perform the validity check of the packet.

19. (Currently Amended) ~~A network node~~An apparatus, comprising:

receiving means for receiving packets from a sending network node; and

performing means for performing a validity check of a packet by referring to validity information contained in a header of the packet,

wherein the validity information comprises all necessary information required for performing the validity check of the packet, and the validity information comprises algorithm information to be used to perform the validity check of the packet.

20. (Currently Amended) A ~~network node~~An apparatus, comprising:

forwarding means for forwarding packets from a sending network node to a receiving network node; and

performing means for performing a validity check of a packet by referring to validity information contained in a header of the packet ,

wherein the validity information comprises all necessary information required for performing a validity check of the packet, and the validity information comprises algorithm information to be used to perform the validity check of the packet.

21-41. (Cancelled)

42. (New) An apparatus, comprising:

a validity information generator configured to generate validity information for a packet;

a packet header generator configured to generate a header for the packet, comprising the validity information; and

a transmitter configured to send the packet including the header to a receiving network node,

wherein the validity information comprises all necessary information required to perform a validity check of the packet, and the validity information comprises algorithm information to be used to perform the validity check of the packet.

43. (New) The apparatus according to claim 42, wherein the validity information comprises security information indicating security services applied to the packet.

44. (New) The apparatus according to claim 42, wherein the validity information comprises algorithm information indicating an algorithm to be used to perform the validity check of the packet.

45. (New) The apparatus according to claim 42, wherein the validity information comprises public key information of a sending node.

46. (New) The apparatus according to claim 45, wherein the public key information comprises reference information related to how a public key can be obtained.

47. (New) The apparatus according to claim 46, wherein the reference information comprises an identity of an entity from which the public key can be obtained.

48. (New) The apparatus according to claim 46, wherein the reference information comprises a public key identifier for the public key.

49. (New) The apparatus according to claim 45, wherein the public key information comprises a public key.

50. (New) The apparatus according to claim 45, wherein the public key information comprises public key verification information indicating information in order to verify that the public key actually belongs to the sending node.

51. (New) The apparatus according to claim 42, wherein the validity information comprises an information item to prevent replay attacks.

52. (New) The apparatus according to claim 51, wherein the information item to prevent replay attacks contains an indication of a procedure to be used for anti-replay attacks.

53. (New) The apparatus according to claim 51, wherein the information item to prevent replay attacks contains a time stamp.

54. (New) The apparatus according to claim 23, further comprising:  
a signor configured to sign the packet using a private key corresponding to a public key indicated by the validity information in the packet header in the sending network node.

55. (New) An apparatus, comprising:  
a receiver configured to receive packets from a sending network node; and  
a checker configured to perform a validity check of a packet by referring to validity information contained in a header of the packet,  
wherein the validity information comprises all necessary information required to perform the validity check of the packet, and the validity information comprises algorithm information to be used to perform the validity check of the packet.

56. (New) The apparatus according to claim 55, wherein the validity information comprises security information indicating security services applied to the packet.

57. (New) The apparatus according to claim 55, wherein the validity information comprises algorithm information indicating an algorithm to be used to perform the validity check of the packet.

58. (New) The apparatus according to claim 55, wherein the validity information comprises public key information of a sending node.

59. (New) An apparatus, comprising:

a transmitter configured to forward packets from a sending network node to a receiving network node; and

a checker configured to perform a validity check of a packet by referring to validity information contained in a header of the packet,

wherein the validity information comprises all necessary information required to perform a validity check of the packet, and the validity information comprises algorithm information to be used to perform the validity check of the packet.

60. (New) The apparatus according to claim 59, wherein the validity information comprises security information indicating security services applied to the packet.

61. (New) The apparatus according to claim 59, wherein the validity information comprises algorithm information indicating an algorithm to be used to perform the validity check of the packet.

62. (New) The apparatus according to claim 59, wherein the validity information comprises public key information of a sending node.

63. (New) A method comprising:

receiving packets; and

performing a validity check of a packet by referring to validity information contained in a header of the packet,

wherein the validity information comprises all necessary information required for performing the validity check of the packet, the validity information comprising algorithm information to be used for performing the validity check of the packet.

64. (New) A method comprising:

forwarding received packets; and

performing means for performing a validity check of a packet by referring to validity information contained in a header of the packet,  
wherein the validity information comprises all necessary information required for performing a validity check of the packet, the validity information comprising algorithm information to be used for performing the validity check of the packet.

65. (New) A system, comprising:

a first generator configured to generate validity information for a packet;  
a second generator configured to generate a header for the packet, comprising the validity information;  
a transmitter configured to send the packet including the header to a receiving network node, wherein the validity information comprises all necessary information required for performing a validity check of the packet; and  
a checker configured to perform a validity check of a packet by referring to validity information contained in a header of the packet, wherein the validity information comprises all necessary information required to perform the validity check of the packet, the validity information comprising algorithm information to be used to perform the validity check of the packet.